

SUPPLEMENTAL MATERIAL

Table S1. Clinical Classification Software (CCS) categories for cardiogenic shock developed through the Healthcare Cost and Utilization Project (HCUP).^{19, 20}

CCS Categories	Description	ICD-9-CM	ICD-10-CM
97	Pericarditis, endocarditis, and myocarditis; cardiomyopathy (no TB or STDs)	032.82, 036.40, 036.41, 036.42, 036.43, 074.20, 074.21, 074.22, 074.23, 112.81, 115.03, 115.04, 115.13, 115.14, 115.93, 115.94, 130.3, 391.0, 391.1, 391.2, 391.8, 391.9, 392.0, 393, 398.0, 398.90, 398.99, 420.0, 420.90, 420.91, 420.99, 421.0, 421.1, 421.9, 422.0, 422.90, 422.91, 422.92, 422.93, 422.99, 423.0, 423.1, 423.2, 423.3, 423.8, 423.9, 425.0, 425.1, 425.11, 425.18, 425.2, 425.3, 425.4, 425.7, 425.8, 425.9, 429.0	A36.81, A38.1, A39.50, A39.51, A39.52, A39.53, B26.82, B33.20, B33.21, B33.22, B33.23, B33.24, B37.6, B58.81, I01.0, I01.1, I01.2, I01.8, I01.9, I02.0, I09.0, I09.2, I09.9, I23.0, I30.0, I30.1, I30.8, I30.9, I31.0, I31.1, I31.2, I31.3, I31.4, I31.8, I31.9, I32, I33.0, I33.9, I38, I39, I40.0, I40.1, I40.8, I40.9, I41, I42.0, I42.1, I42.2, I42.3, I42.4, I42.5, I42.7, I42.8, I42.9, I43, I51.4
100	Acute myocardial infarction	410.0, 410.00, 410.01, 410.02, 410.1, 410.10, 410.11, 410.12, 410.2, 410.20, 410.21, 410.22, 410.3, 410.30, 410.31, 410.32, 410.4, 410.40, 410.41, 410.42, 410.5, 410.50, 410.51, 410.52, 410.6, 410.60, 410.61, 410.62, 410.7, 410.70, 410.71, 410.72, 410.8, 410.80, 410.81, 410.82, 410.9, 410.90, 410.91, 410.92	I21.01, I21.02, I21.09, I21.11, I21.19, I21.21, I21.29, I21.3, I21.4, I22.0, I22.1, I22.2, I22.8, I22.9, I21.9, I21.A1, I21.A9
101	Coronary atherosclerosis and other heart disease	411.0, 411.1, 411.8, 411.81, 411.89, 412, 413.0, 413.1, 413.9, 414.0, 414.00, 414.01, 414.06, 414.2, 414.3, 414.4, 414.8, 414.9, V45.81, V45.82	I20.0, I20.1, I20.8, I20.9, I23.7, I24.0, I24.1, I24.8, I24.9, I25.10, I25.110, I25.111, I25.118, I25.119, I25.2, I25.5,

			I25.6, I25.750, I25.751, I25.758, I25.759, I25.811, I25.82, I25.83, I25.84, I25.89, I25.9, Z95.1, Z95.5, Z98.61
103	Pulmonary heart disease	415.0, 415.1, 415.12, 415.13, 415.19, 416.0, 416.1, 416.2, 416.8, 416.9, 417.0, 417.1, 417.8, 417.9, V12.55	I26.01, I26.02, I26.09, I26.90, I26.92, I26.99, I27.0, I27.1, I27.2, I27.81, I27.82, I27.89, I27.9, I28.0, I28.1, I28.8, I28.9, Z86.711, I27.20, I27.21, I27.22, I27.23, I27.24, I27.29, I27.83
106	Cardiac dysrhythmias	427.0, 427.1, 427.2, 427.31, 427.32, 427.60, 427.61, 427.69, 427.81, 427.89, 427.9, 785.0, 785.1	I47.0, I47.1, I47.2, I47.9, I48.0, I48.1, I48.2, I48.3, I48.4, I48.91, I48.92, I49.1, I49.2, I49.3, I49.40, I49.49, I49.5, I49.8, I49.9, R00.0, R00.1, R00.2
107	Cardiac arrest and ventricular fibrillation	427.41, 427.42, 427.5	I46.2, I46.8, I46.9, I49.01, I49.02
108	Congestive heart failure; non-hypertensive	398.91, 428.0, 428.1, 428.20, 428.21, 428.22, 428.23, 428.30, 428.31, 428.32, 428.33, 428.40, 428.41, 428.42, 428.43, 428.9	I09.81, I50.1, I50.20, I50.21, I50.22, I50.23, I50.30, I50.31, I50.32, I50.33, I50.40, I50.41, I50.42, I50.43, I50.9, I50.810, I50.811, I50.812, I50.813, I50.814, I50.82, I50.83, I50.84, I50.89

HCUP CCS, Healthcare Cost and Utilization Project (HCUP). December 2009, U.S. Agency for Healthcare Research and Quality, Rockville, MD, USA.

Table S2. Diagnosis and Procedure Codes used to define index event, baseline characteristics and interventions.

Diagnosis Codes		
Conditions	ICD-9-CM	ICD-10-CM
Cardiogenic shock	785.51	R57.0
Heart failure (Primary diagnosis)	402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 404.03, 404.13, 404.93, 428, 428.9, 428.1, 428.2, 428.21, 428.22, 428.23, 428.3, 428.31, 428.32, 428.33, 428.4, 428.41, 428.42, 428.43	I11.0, I13.0, I13.2, I50.9, I50.1, I50.20, I50.21, I50.22, I50.23, I50.30, I50.31, I50.32, I50.33, I50.40, I50.41, I50.42, I50.43
Mitral Valve Disease	424.0	I34.0, I34.1, I34.2, I34.8, I34.9
Hypertension	401.x, 402.x–405.x	I10.x, I11.x–I13.x, I15.x, O10.x, O11.x, O16.x
Chronic Heart Failure	398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4–425.9, 428.x	I09.9, I11.0, I13.0, I13.2, I25.5, I42.0, I42.5- I42.9, I43.x, I50.x, P29.0
Atrial Fibrillation/Flutter	427.31, 427.32	I48.0, I48.1, I48.2, I48.3, I48.4, I48.91, I48.92
Renal Failure	403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 585.x, 586.x, 588.0, V42.0, V45.1, V56.x	N18.x, N19.x, Z49.0x, Z49.3x, Z91.15, Z94.0, Z99.2
Pulmonary Disease	490 -496, 500-505, 506.4	J40.x–J47.x, J60.x–J67.x, J68.4
Myocardial Infarction	410.xx, 411.1, 412	I20.0, I21.x, I22.x, I25.110, I25.2, I25.7x

Peripheral Vascular Disorder	093.0, 437.3, 440.x, 441.x, 443.1– 443.9, 447.1, 557.1, 557.9, V43.4	I70.x, I71.x, I72.x, I73.1, I73.8, I73.9, I77.1, I79.0, I79.1, I79.8, K55.1, K55.8, K55.9, Z95.8
Concomitant Valvular Disease (Tricuspid and/or Aortic)	424.1, 424.2	I35.0, I35.1, I35.2, I35.8, I35.9, I36.0, I36.1, I36.2, I36.8, I36.9
Cerebral Vascular Disease	362.34, 430.x - 438.x	G45.x, G46.x, H34.0, I60.x - I69.x
Ventricular Tachycardia/Fibrillation	427.0, 427.1, 427.2, 427.41, 427.42	I47.0, I47.2, I47.9, I49.01, I49.02, I49.2
Procedure Codes		
Procedure	ICD-9-PCS	ICD-10-PCS
MitraClip	35.97	02UG3JZ
Heart Transplant	37.51	02YA0Z[0/1/2]
LVAD	37.66	02HA0QZ
Mitral Valve Interventions	35.02, 35.12, 35.23, 35.24, 35.97	02QGxxx, 02UGxxx, 02RGxxx, 027Gxxx, 02NGxxx, 02CGxxx, 02VGxxx
Circulatory Support (IABP/Impella/ECMO)	37.61, 37.68, 39.65	5A02[1/2]10, 5A1522[3/F/G/H], 5A021[1/2][6/D]
Mechanical Ventilation	96.70, 96.71, 96.72	5A19[3/4/5]5Z
Coronary Interventions (PCI/CABG)	36.07, 36.06, 00.66, 36.1x	027[0-3]x[4-7]x, 027[0-3]x[D-G]x, 027[0- 3]xZx, 021[0-3][0/4]xx
Hemodialysis	39.95	5A1D[0/6/7-9]0Z

CABG=coronary artery bypass graft; ECMO=extracorporeal membrane oxygen; IABP=intraortic balloon pump; ICD=International Classification of Diseases; LVAD=Left Ventricular Assist Device; PCI=percutaneous coronary intervention

Figure S1(A). Propensity score density plots for MitraClip and non-MitraClip groups before (left) and after (right) matching.

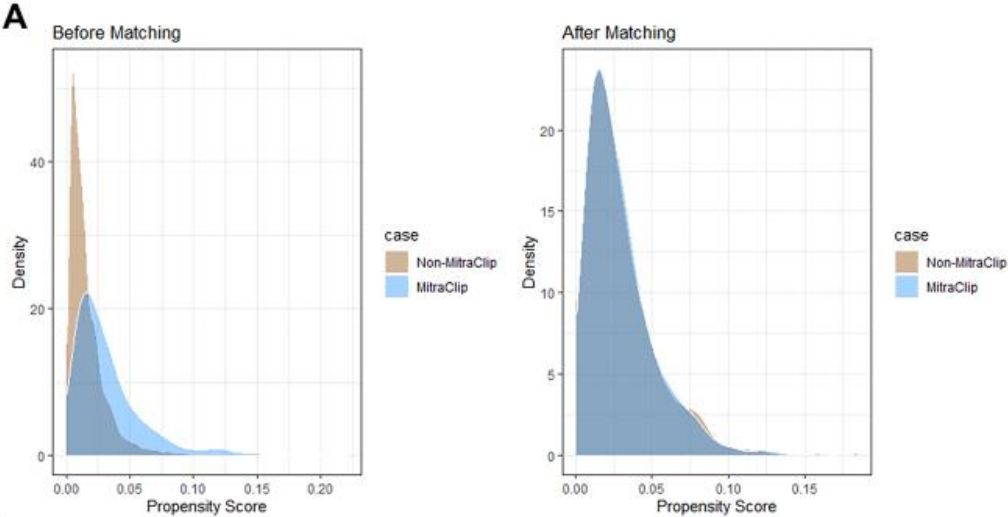


Figure S1(B). Love plots showing covariate balance before (brown) and after (blue) matching.

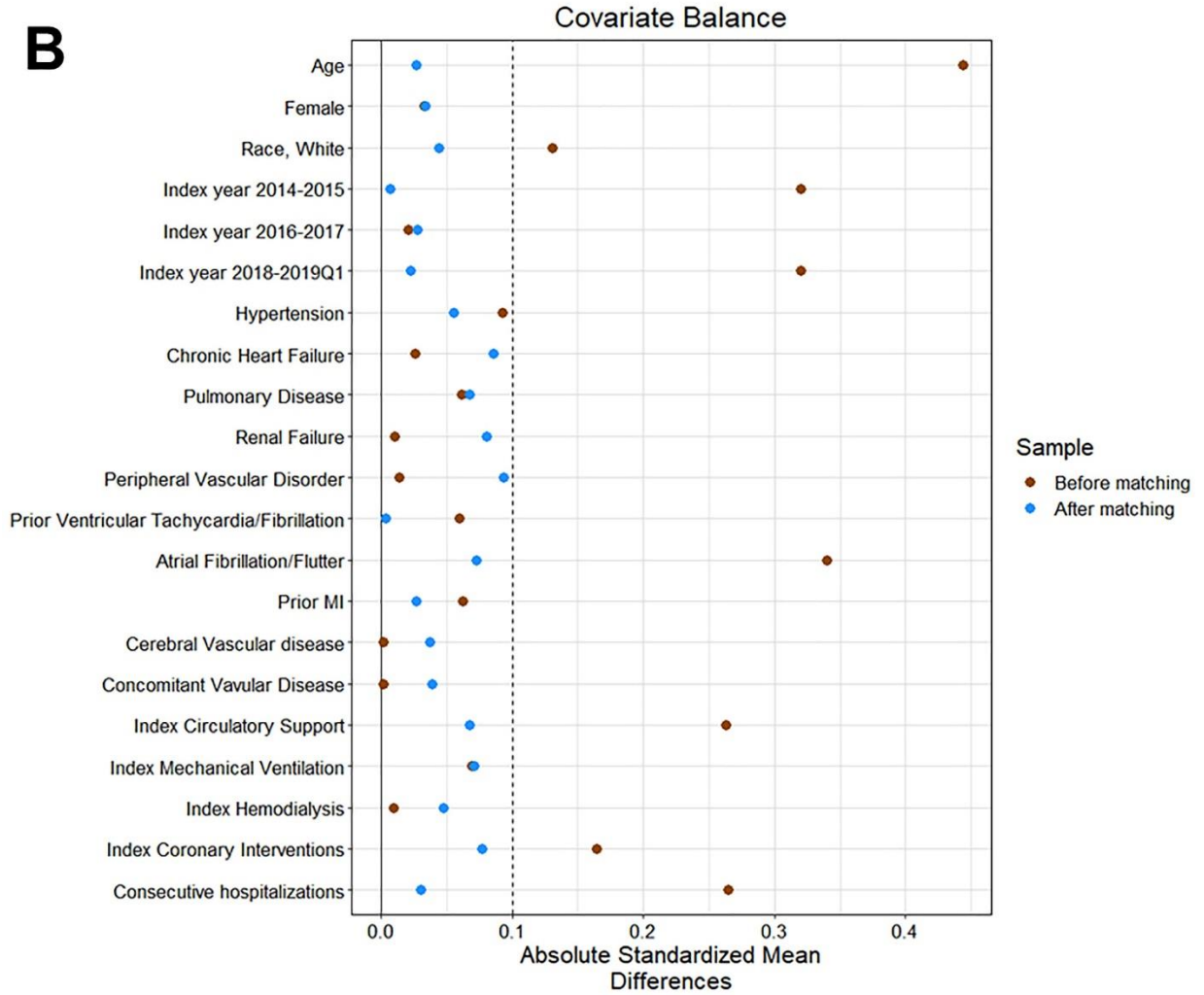


Figure S2. Kaplan Meier Curve for composite endpoint of freedom from all-cause mortality, left ventricular assist device (LVAD) implant, or heart transplant.

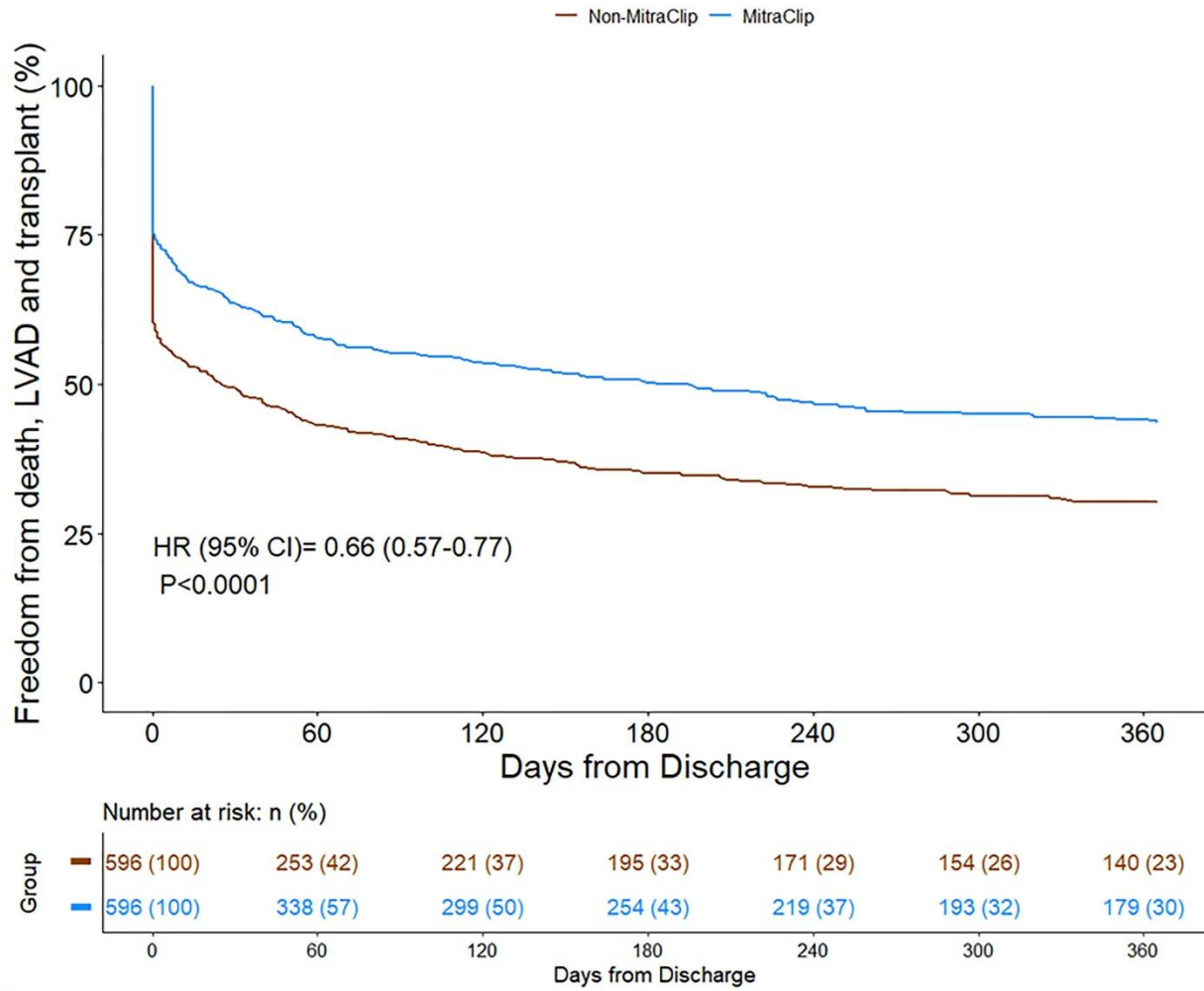


Figure S3. Landmark analysis showing Kaplan Meier survival curve in patients with mitral regurgitation and cardiogenic shock who were discharged live from index hospitalization.

